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### **Education and Training**

1984–1990 U.C. Los Angeles, Los Angeles, CA USA, Ph.D. (Physical Chemistry)  
Advisor: Professor R. Stanley Williams  
1978–1983 U.C. Riverside, Riverside, CA USA, B.S. (Chemistry)

### **Research and Professional Experience**

2013–present Senior Scientist/Principal Investigator (PI); Director, The Glenn T. Seaborg Center (GTSC); Leader, Actinide Chemistry Group (ACG); Chemical Sciences Division (CSD), Lawrence Berkeley National Laboratory (LBNL)  
2011–2013 Senior Scientist/PI; Director, GTSC; Director, Molecular Environmental Sciences Beamline-11.0.2 (MES BL-11.0.2) at the Advanced Light Source (ALS); Leader, ACG; CSD, LBNL  
2000–2011 Senior Staff Scientist/PI; Project Leader, MES BL-11.0.2; ACG, CSD, Associate Director, GTSC (2007-); CSD, LBNL  
1999–2000 Staff Scientist/PI; Project Leader, MES BL-11.0.2; ACG, CSD, GTSC, LBNL  
1997–99 Staff Scientist/PI; Leader, MES BL-11.0.2; ACG, CSD, LBNL  
1992–97 Staff Scientist/PI; ACG, CSD, LBNL  
1990–92 Postdoctoral Fellow, Department of Physics, U.C. Riverside

### *Awards*

2011 Director's Award for Exceptional Achievement, LBNL  
2010 Professor T. J. Delbaere Memorial Award 2010, Canadian Light Source  
2008 Inaugural Richard G. Haire Lecture, Chemistry Department, Auburn University  
2002 Outstanding Performance Award, LBNL  
1997 Outstanding Performance Award, LBNL  
1984–85 Du Pont Excellence in Teaching Award, U.C. Los Angeles

### **Publications** (from more than 200 in the open literature)

1. S. M. Butorin, D. C. Mancini, J. H.-Guo, N. Wassdahl, J. Nordgren, M. Nakazawa, S. Tanaka, T. Uozumi, A. Kotani, Y. Ma, K. Miyano, S. H. Southworth, B. A. Karlin, and D. K. Shuh, "Resonant X-ray Fluorescence Spectroscopy of Correlated Systems: A Probe of Charge Transfer Excitations," Phys. Rev. Lett. **77**, 574-577 (1996). DOI: 10.1103/PhysRevLett.77.574
2. M. Magnuson, S. M. Butorin, L. Werme, J. Nordgren, K. E. Ivanov, J.-H. Guo, and D. K. Shuh, "Uranium Oxides Investigated by X-ray Absorption and Emission Spectroscopies," Appl. Surf. Sci. **252**, 5615-5618 (2006). DOI: 10.1016/j.apsusc.2005.12.13

3. K. O. Kvashnina, S. M. Butorin, D. K. Shuh, J.-H. Guo, L. Werme, and J. A. Nordgren, "Resonant Inelastic X-ray Scattering of Curium Oxide," *Phys. Rev. B.* **75**, 115107 (2007). DOI: 10.1103/PhysRevB.75.115107
4. N. Vigier, C. Den Auwer, C. Filliaux, A. Maslennikov, H. Noël, J. Roques, D. K. Shuh, E. Simoni, T. Tyliszczak, and P. Moisy, "New Data on the Structure of Uranium Monocarbide," *Chem. Mater.* **20**, 3199-3204 (2008). DOI: 10.1021/cm8001783
5. S. G. Minasian, J. L. Krinsky, J. D. Rinehart, V. A. Williams, R. Copping, T. Tyliszczak, M. Janousch, D. K. Shuh, and J. Arnold, "A Comparison of 4f vs. 5f Metal–Metal Bonds in  $(CpSiMe_3)_3M-E Cp^*$  ( $M = Nd, U$ ;  $E = Al, Ga$ ;  $Cp^* = C_5Me_5$ ): Synthesis, Thermodynamics, Magnetism, and Electronic Structure," *J. Amer. Chem. Soc.* **131**, 13767-13783 (2009). DOI: 10.1021/ja904565j
6. J. A. Bradley, E. R. Batista, K. S. Boland, C. J. Burns, D. L. Clark, S. D. Conradson, S. A. Kozimor, R. L. Martin, G. T. Seidler, D. K. Shuh, T. Tyliszczak, M. P. Wilkerson, L. E. Wolfsberg, and P. Yang, "NaReO<sub>4</sub>, an Intensity Standard for O K-edge Covalency Studies Using XAS and NRIXS Spectroscopy," *J. Amer. Chem. Soc.* **132**, 13914-13921 (2010). DOI: 10.1021/ja1040978
7. C. Filliaux, D. Guillaumont, J.-C. Berthet, R. Copping, D. K. Shuh, T. Tyliszczak, and C. Den Auwer, "Investigating the Electronic Structure and Bonding in Uranyl Compounds by Combining NEXAFS and Quantum Chemistry," *Phys. Chem. Chem. Phys.* **12**, 14253-14262 (2010). DOI: 10.1039/c0cp00386g
8. S. G. Minasian, J. M. Keith, E. R. Batista, K. S. Boland, D. L. Clark, S. D. Conradson, S. A. Kozimor, R. L. Martin, D. E Schwarz, D. K. Shuh, G. A. Wagner, M. P. Wilkerson, L. E. Wolfsberg, and P. Yang, "Determining Relative f and d Orbital Contributions to M-Cl Covalency in  $MCl_6^{2-}$  ( $M = Ti, Zr, Hf, U$ ) and  $UOCl_5^-$  Using Cl K-edge X-ray Absorption Spectroscopy and Time-dependent Density Functional Theory," *J. Am. Chem. Soc.* **134**, 5586-5597 (2012). DOI: 10.1021/ja2105015
9. S. G. Minasian, J. M. Keith, E. R. Batista, K. S. Boland, J. A. Bradley, S. R. Daly, D. Sokaras, S. A. Kozimor, W. W. Lukens, R. L. Martin, D. Nordlund, G. T. Seidler, D. K. Shuh, T. Tyliszczak, G. Wagner, T.-C. Weng, and P. Yang, "Trends in Transition Metal–oxo Orbital Mixing Identified Using Oxygen K-edge XAS and DFT," *J. Amer. Chem. Soc.* **135**, 1864-1871 (2013). DOI: 10.1021/ja310223b
10. S. G. Minasian, J. M. Keith, E. R. Batista, S. A. Kozimor, R. L. Martin, D. K. Shuh, and T. Tyliszczak, "Evaluating Organometallic Bonding in Metallocene Dichlorides Using Carbon K-edge X-ray Absorption Spectroscopy and Time Dependent Density Functional Theory," *J. Amer. Chem. Soc.* **135**, 14731-14740 (2013). DOI: 10.1021/ja405844j